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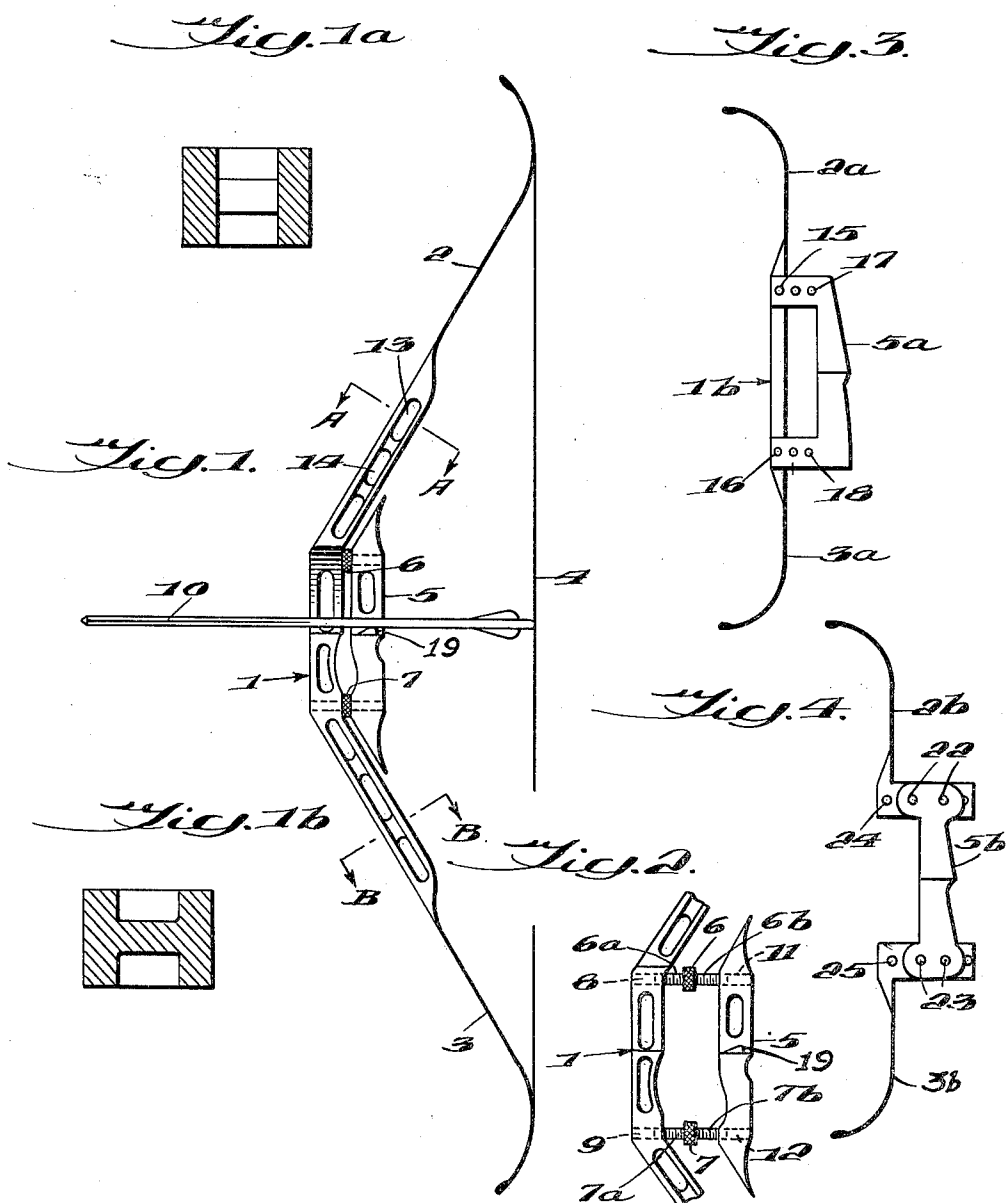
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3,055,353

ARCHERY BOWS

Filed July 31, 1959

2 Sheets-Sheet 1



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Fig. 8.

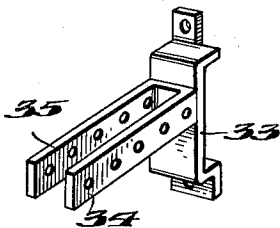


Fig. 9.

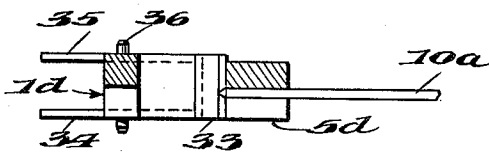


Fig. 7.

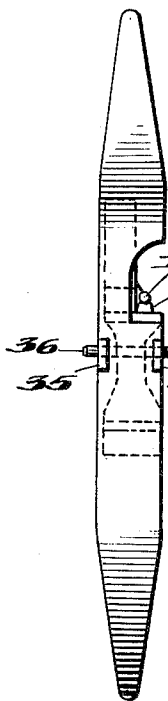


Fig. 6.

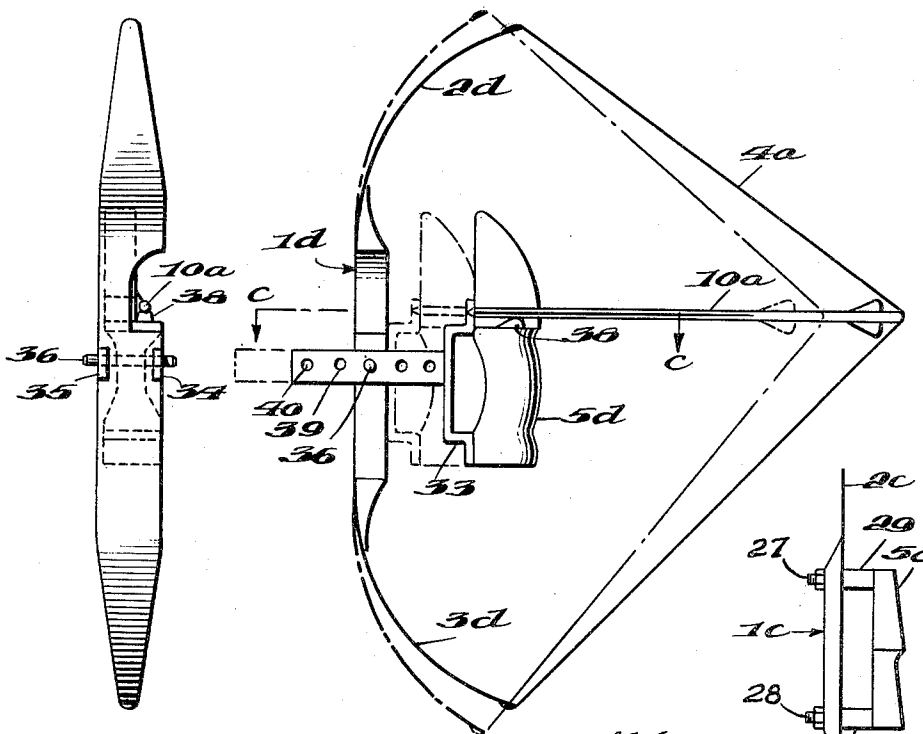
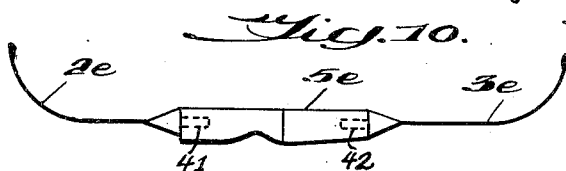


Fig. 10.

Fig. 5.

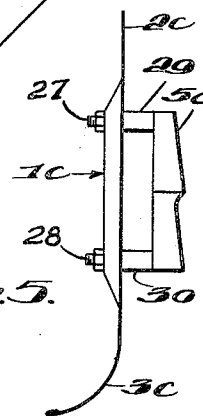
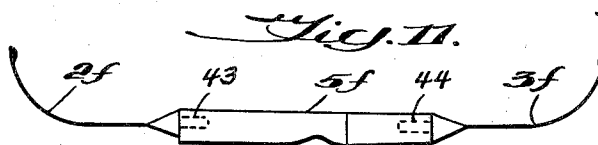


Fig. 11.

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ARCHERY BOWS

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8 Claims. (Cl. 124—24)

This invention relates to archery bows, and more particularly to a bow structure employing an adjustable handle for changing the pull weight of the bow.

Archery bows are manufactured and sold generally according to their pull weight, which is a measure of the force required to draw the bow to a fully operative position. These bows have a particular pull weight rated in pounds, and are usually manufactured in one pound increments. If a scale is used to measure the force required to pull the bow string to different distances it may be determined, for example, that if a person pulls the string to a distance of 22 inches from the handle it requires a force of 34 pounds; if it is pulled to 26 inches a force of 36 pounds is required; and if it is pulled to 28 inches a force of 40 pounds is required. The distance or draw length varies from person to person, but each person consistently draws to the same length and consequently derives at a constant pull weight for any given bow.

At any one pull weight an arrow shot from a bow will have a particular trajectory. An archer must practice in order to memorize this trajectory for distances that vary up to 80 yards on a standard Field Archery Course. To further illustrate, consider two identical bows each rated at 40 pounds pull weight at a 28 inch draw length. An individual utilizing a draw length of 28 inches will have to memorize a 40-pound trajectory. A second individual utilizing a draw length of 26 inches will have to memorize a 36-pound trajectory. It can be seen that if these two individuals are in competition the former will have the advantage of a flatter and more accurate trajectory at 80 yards than the latter. Formerly, the only practical way for the second individual to overcome this disadvantage was to obtain another bow with a greater pull weight. In order to be certain that the optimum pull weight for a variety of conditions is available, it has been necessary, therefore, to have available a plurality of bows having different pull weights.

A feature of this invention is the provision of an archery bow in which the pull weight may be varied to meet different conditions as desired.

According to a preferred embodiment of the invention, an archery bow is provided with an auxiliary handle member which is attached to the belly side of the body portion of the bow. The handle member is adjustable relative to the body portion, and by varying the spacing between the handle and the body portion the effective pull length of the bow can be changed. Since the pull weight is a function of the pull length, the handle adjustment varies the pull weight of the bow.

This preferred embodiment of the invention, together with modifications thereof, is illustrated in the accompanying drawings in which:

FIG. 1 illustrates one embodiment of a bow employing an adjustable handle thereon;

FIG. 1(a) is a sectional view of the bow of FIG. 1 taken on line A—A;

FIG. 1(b) is a sectional view of the bow of FIG. 1 taken along the line B—B;

FIG. 2 is a detail view of the handle of the bow of FIG. 1 in its maximum pull weight position;

FIGS. 3 through 5 illustrate further structural arrangements of adjustable handles;

FIG. 6 shows a bow structure employing an adjustable handle in different positions;

FIG. 7 is a front view of the bow of FIG. 6;

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FIG. 8 is a detail view of the adjusting bracket for the bow shown in FIG. 6;

FIG. 9 is a sectional view taken along line C—C of FIG. 6; and

FIGS. 10 and 11 illustrate the use of different length handles with one set of limbs.

Referring now to the drawings, and more particularly to FIG. 1, there is shown a bow structure comprising a body portion 1, limbs 2 and 3 and bowstring 4, which stretches between the extremity of limbs 2 and 3. A handle 5 is attached to body portion 1 by means of screw members having knurled adjusting knobs 6 and 7. Handle 5 is equipped with an arrow rest 19 to assist in aiming and directing the flight of arrow 10.

The body portion 1 has a plurality of cutouts such as shown at 13 and 14. This produces a bow which is structurally rigid, yet light in weight and attractive in appearance. FIG. 1(a) is a cross-sectional view of the body portion 1 taken along line A—A of FIG. 1, and shows a detail of the cutout portion. FIG. 1(b) is a cross-sectional view taken along line B—B of FIG. 1 and shows the inner web member which produces a cross-section of a shape similar to an I-beam.

The manner in which the handle 5 is attached to body portion 1 is seen from FIG. 2. Body portion 1 is provided with a pair of threaded holes 8 and 9 into which the screw-threaded members 6a and 7a are adjustably positioned. Similarly handle 5 is provided with threaded openings 11 and 12 which receive screw-threaded members 6b and 7b, respectively. The threads on screw members 6a, 6b, 7a and 7b are so arranged that by turning knurled adjusting knobs 6 and 7, the handle member 5 will move toward or away from body portion 1. Since the pull length is the distance between handle 5 and bowstring 4, adjusting the spacing of handle 5 with respect to body portion 1 will produce variations in pull weight while allowing the pull length to remain constant.

It will be appreciated that handle 5 could assume a variety of shapes and sizes to suit the particular needs and fancies of different people. The essential feature is that the handle be adjustable relative to the body portion 1.

The adjustable bow structure shown in FIG. 3 comprises a body portion 1b with unitary limbs 2a and 3a. A rigid U-shaped handle 5a is fastened to body portion 1b by means of suitable locking pins which extend through holes 15 and 16 in handle 5a and corresponding holes in body portion 1b. Additional holes such as 17 and 18 in handle 5a provide for adjustment such that the distance between body portion 1b and handle 5a can be varied.

FIG. 4 shows a bow structure in which the handle 5b serves as the body portion of the bow. Handle 5b has pairs of holes 22 and 23 at either end through which suitable locking pins extend to fasten the handle to limbs 2b and 3b. Additional holes in the limb members, as at 24 and 25, provide adjustment for the relative position of the handle with respect to the limbs. This structure has the additional advantage that it may be disassembled to occupy a minimum amount of space during storage or transportation.

The modification shown in FIG. 5 utilizes a handle 5c which is bolted to body portion 1c by means of bolts 27 and 28. The relative position of handle 5c with respect to body portion 1c is governed by spacer members 29 and 30 which fit over bolts 27 and 28, respectively. By utilizing spacers of different sizes, any desired spacing between handle 5c and body portion 1c may be obtained.

The bow of FIG. 6 is shown in fully drawn position. The dotted line structure is used to illustrate a second operative position in which the pull length is the same,

but the pull weight is reduced. The bow structure comprises a body portion 1d having integral limbs 2d and 3d. A bowstring 4a is strung between the extremities of limbs 2d and 3d. A handle member 5d is rigidly mounted on body portion 1d by means of a bracket including the base 33 and arms 34 and 35. The arms 34 and 35 engage slots (FIG. 7) in the body portion 1d. In this manner the handle member 5d is adjustably mounted on the body portion 1d by means of the bracket. This structure is easily understood from FIGS. 8 and 9.

Arms 34 and 35 are provided with a plurality of evenly spaced holes to receive a suitable locking pin which extends through the body portion 1d of the bow and corresponding holes in arms 34 and 35. FIGS. 6 and 7 clearly illustrate the adjusting and locking mechanism of the bow.

An arrow 10a is shown in position upon arrow rest 38. FIG. 7 illustrates how a portion of the body 1d is cut away to provide an unobstructed path for arrow 10a.

FIGS. 10 and 11 illustrate another embodiment of the invention in which different length body portions 5e and 5f are detachably secured to limbs 2e, 3e, 2f, and 3f. The limbs and handle may be secured together by any suitable means such as pegs 41—44 which are integral with the limb members and are detachably received in holes in the ends of the body portions. In this type of structure, the pull weight is varied by utilizing handles of different lengths.

From the foregoing description it will be seen that the present invention has eliminated the need for a large number of archery bows with different pull weights and handle shapes and sizes. Utilizing the principles set forth herein, it is possible to adapt a single bow structure to a number of different uses by means of simple adjustments or substitutions in component parts of the bow structure. Since the archer may maintain the same draw or pull length for a number of different pull weights, it is no longer necessary to have a variety of arrow lengths available, so that uniformity is increased without sacrificing performance.

While the invention has been illustrated and described in certain embodiments, it is recognized that variations and changes may be made therein without departing from the invention as set forth in the claims.

What is claimed is:

1. An adjustable pull weight archery bow comprising a body portion, a pair of limbs, a handle, and means connecting said handle to the belly side of said body por-

tion for adjusting the distance between said handle and the belly side of said body portion.

2. A device as in claim 1 wherein said means comprises first and second screw members, each of said screw members having a pair of oppositely threaded ends adapted to engage said body portion and said handle, respectively.

3. A device as in claim 1 wherein said means comprises a pair of screw members threadably engaging said body portion and said handle for adjusting the displacement therebetween.

4. A device as in claim 1 wherein said means comprises at least one pair of locking pins each of which is insertable through the body portion and into one of a plurality of evenly spaced holes in the upper and lower portions of said handle, respectively.

5. A device as in claim 1 wherein said means comprises a pair of bolt members for joining said handle and said body portion and a pair of spacers mounted between said handle and said body portion.

6. A device as in claim 1 wherein said means comprises a U-shaped member rigidly affixed to said handle, each leg of said member being slidably seated in one of a pair of slots in said body portion, and each of said legs including a plurality of spaced holes for receiving a locking pin through a corresponding pair of said holes and said body portion for locking said member and said handle in a predetermined adjusted relationship with respect to said body portion.

7. An adjustable pull weight archery bow comprising a body portion, a pair of limbs, an auxiliary handle adjustably affixed to the belly side of the body portion by a first member threaded into the upper portion of said handle and into said body portion and a second member threaded into the lower portion of said handle and into said body portion, and a bow string affixed to the outer extremities of said limbs, whereby the pull weight of said bow may be varied in accordance with the variation in the distance between said handle and said body portion.

8. A device as in claim 7 wherein said handle has an arrow rest integral therewith.

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